From:	Hawkins, Andy
To:	"Miller, Ken"
Cc:	Algoe-Eakin, Amy
Subject:	FW: Monitoring
Date:	Wednesday, July 13, 2016 11:55:00 AM
Attachments:	raster.grd raster.gri

Ken,

Per our discussion. This describes the process used to create the plots in the pdf Amy shared.

Andy Hawkins
EPA Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219
(913) 551-7179 office
hawkins.andy@epa.gov

From: Hawkins, Andy
Sent: Friday, July 08, 2016 4:44 PM
To: 'Anderson, Kenneth J' <KAnderson@ameren.com>
Cc: Michael Jay <Jay.Michael@epa.gov>; Peter, David <peter.david@epa.gov>; Algoe-Eakin, Amy <algoe-eakin.amy@epa.gov>; 'Moore, Kyra' <kyra.moore@dnr.mo.gov>; 'Wilbur, Emily' <emily.wilbur@dnr.mo.gov>
Subject: Monitoring

Ken,

Mike asked that I describe the map he showed on monitor siting. I want to state that map shown was to start the discussion and should not be considered a final EPA approved siting analysis as that was not the intent.

So the frequency overlay represented counts of where on the domain a receptor had a value > 30 ug/m3 and only the maximum receptor domain wide received a count. The modeling used was from your beta request "Labadie_sites_default.inp" and I used your onsite met data as provided, so your "KSUSILX-LAB-MIN-A2015D" files. I made no modifications to either the met or emissions inputs and I used your receptor grid "Receptors_grid.rou" file as provided. I did review your met file and saw no issues. I ran with no background and output a threshold MAXIFILE to output any model result >1 ug/m3 for all receptors, and this output file was the basis of the frequency counts (see R code below). So this approach does not follow the EPA modeling TAD (really can't with only 8 months of met data) and only looks at frequency.

I'm willing to work with you on enhancing this analysis using your onsite met data. It may be appropriate to normalize your emissions and use some reasonable stack parameters with all available onsite met and redo this analysis incorporating frequency and higher concentration

combined ranks, I would recommend that for a more robust documented defensible analysis.

Someone asked for the coordinates of the monitors…
(38.5818,-90.865528,"NW")
(38.572522,-90.796911,"Valley")
(38.581919,-90.835309,"Quarry")
(38.600896,-90.864733,"Augusta")

I've attached the electronic file I used to map the frequency counts.

And the R code used to create the attached raster… note I made no attempt to find the exact max impact locations just general locations to look at potential monitor sites using more frequent high impacts with your onsite data. I may rewrite my code to redo this analysis following closer to the monitoring TAD even though we have no 3yr average 4th highs.

```
#data <- read.table(file="MAXIFILE_DEF.TXT",skip=9,header=F,fill=T)
#data <- na.omit(data)
#data <- data[data$V9>30,]
#attach(data)
#data <- data.frame(V3,V4,V5,V9)
#ag <- aggregate(V9~V3, data, max)
#hourly_max <- merge(ag,data,by=c("V3","V9"))
#hourly_max$loc <- (paste(hourly_max$V4,hourly_max$V5))
#counts <- data.frame(table(hourly_max$loc))
#counts$y <- as.numeric(substr(counts$Var1,10,20))
#counts$x <- as.numeric(substr(counts$Var1,1,9))
#counts <- na.omit(counts)
#plot(counts$x,counts$y,cex=counts$Freq)
#counts1 <- data.frame(counts$x,counts$y,counts$Freq)
#colnames(counts1) <- c("x","y","Freq")
#e <- extent(counts1[,1:2])
#r <- raster(e, ncol=50, nrow=50)
#x <- rasterize(counts1[,1:2], r, as.numeric(counts1[,3]), fun=sum)
```

Andy Hawkins
EPA Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219
(913) 551-7179 office
hawkins.andy@epa.gov